

Textbook Alignment to the Utah Core – 9th Grade Earth Systems

This alignment has been completed using an “Independent Alignment Vendor” from the USOE approved list (www.schools.utah.gov/curr/imc/indvendor.html.) Yes N/A No N/A

Name of Company and Individual Conducting Alignment: Jan Bond

A “Credential Sheet” has been completed on the above company/evaluator and is (Please check one of the following):

☐ On record with the USOE.

☐ The “Credential Sheet” is attached to this alignment.

Instructional Materials Evaluation Criteria (name and grade of the core document used to align): 9th Grade Earth System Core Curriculum

Title: Astronomy Today, 6th Edition (c) 2008, (Chaisson/McMillan)

ISBN#: 0132418177 (SE); 0132400952 (Inst Resource Manual); 0132400871 (Media mgr); 0131852868 (Starry Night CD);

Publisher: Pearson publishing as Prentice Hall

Overall percentage of coverage in the *Student Edition (SE) and Teacher Edition (TE)* of the Utah State Core Curriculum: 97 %

Overall percentage of coverage in *ancillary materials* of the Utah Core Curriculum: 75 %

STANDARD I: Students will understand the scientific evidence that supports theories that explain how the universe and solar system developed.

Percentage of coverage in the <i>student and teacher edition</i> for Standard I: <u>100</u> %	Percentage of coverage not in student or teacher edition, but covered in the <i>ancillary material</i> for Standard I: <u>100</u> %		
OBJECTIVES & INDICATORS	Coverage in <i>Student Edition (SE) and Teacher Edition (TE)</i> (pg	Coverage in <i>Ancillary Material</i> (titles, pg #'s, etc.)	<i>Not covered in TE, SE or ancillaries</i> ✓

		#’s, etc.)		
Objective 1.1: Describe the big bang theory and evidence supporting it.				
a.	Determine the motion of a star relative to Earth based on a red or blue shift in the wavelength of light from the star.	SE: 78, 79, 80, 82, 100, 101, 102, 103, 104, 452, 453, 454 IRM: 47, 56, 57, 217, 218	IRM: Relevant Lecture-Tutorials # 21 Doppler Effect p. 57; Student Companion Website Media Tutorials: Absorption Spectra p. 62; Transparencies T-35 p. 52; T-39 p. 62; Suggested Readings pp. 52-53; Peer Instruction For Astronomy booklet: Chapter 5 Doppler Effect p. 72; Lecture-Tutorials for introductory astronomy booklet Doppler Shift pp. 73-77; Starry Night Pro™ Activities & Observation and Research Projects: Activity 1 p. 7; Observation and Research Projects Ch. 1 Charting the Heavens p. 211; Learner-Centered Astronomy Teaching Strategies booklet: Instructor Resource Center on CD-ROM: Disc 1, 3; Astronomy Today Media Manger DVD-ROM Chapter’s 1-28, w/Technical Support 24/7;	

			Pearson Education's Online Solutions Companion Web Site: http://www.phschool.com/access ;	
b.	Explain how evidence of red and blue shifts is used to determine whether the universe is expanding or contracting.	SE: 588, 589, 590, 591, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 730, 731 IRM: 335, 336, 337, 338	IRM: Relevant Lecture-Tutorials # 38 Expansion of the Universe p. 340; Student Companion Website Media Animations/Videos p. 345; Transparencies T-218-T-220; Suggested Readings pp. 345-347; Lecture-Tutorials for introductory astronomy booklet Expansion of the Universe pp. 133-134; Peer Instruction For Astronomy booklet: Chapter 5 The Hubble Expansion p. 115-117; Norton's Star Atlas and Reference Handbook: pp. 135-136; Starry Night Pro TM Activities & Observation and Research Projects: Ch. 26 Cosmology p. 237; Learner-Centered Astronomy Teaching Strategies booklet: Instructor Resource Center on CD-ROM: Disc 4; Astronomy Today Media Manger DVD-ROM Chapter's 1-28,	

			<p>w/Technical Support 24/7;</p> <p>Pearson Education's Online Solutions Companion Web Site: http://www.phschool.com/access;</p>	
c.	Describe the big bang theory and the red shift evidence that supports this theory.	<p>SE: 714, 715, 716, 717, 730, 731</p> <p>IRM: 337, 338, 345, 346</p>	<p>IRM: Student Companion Website Media Animations/Videos p. 345;</p> <p>Suggested Readings p. 346;</p> <p>Norton's Star Atlas and Reference Handbook: p. 136;</p> <p>Starry Night Pro Activities & Observation and Research Projects: Ch. 26 Cosmology p. 237;</p> <p>Learner-Centered Astronomy Teaching Strategies booklet:</p> <p>Instructor Resource Center on CD-ROM: Disc 4;</p> <p>Astronomy Today Media Manger DVD-ROM Chapter's 1-28, w/Technical Support 24/7;</p> <p>Pearson Education's Online Solutions Companion Web Site: http://www.phschool.com/access;</p>	
d.	Investigate and report how science has changed the accepted ideas regarding the nature of the universe	<p>SE: 36-50, 51 -61, 66, 67, 69, 70, 72-75, 78, 86, 88, 89, 90-</p>	<p>IRM: Student Companion Website Media</p>	

	throughout history.	<p>103, 104, 105, 108-139, 140, 141, 155-165, 166, 167, 208-209, 213-217, 218, 316-319, 322-332, 338-339, 342-354, 356, 357, 365, 366, 370-380, 412-413, 464, 483, 507, 508, 561, 581, 594-599, 608-609, 614-615, 620, 624-625, 650-651, 661-671, 710-721, 725-729, 738-742, 746-755</p> <p>IRM: 30-34, 46, 47, 55, 56, 65-69, 80-81, 106, 155, 167, 168, 284, 297, 298, 325-326, 335-336, 350</p>	<p>Animations/Videos; p. 41, 74, 112-113, 124, 135-136, 150, 186, 306, 331, 345, 355;</p> <p>Suggested Readings pp. 41-43, 52-53, 63, 75-76, 87-88, 113-114, 163-164, 174, 186-188, 199-200, 212-213, 229, 239-240, 251-252, 278-279, 292-294, 307-308, 322-323, 332-333, 345-347, 356, 367-368;</p> <p>Starry Night Pro Activities & Observation and Research Projects: Ch. 2 The Copernican Revolution p. 212, Ch. 3 Radiation p. 213, Ch. 4 Spectroscopy p. 214, Ch. 5 Telescopes p. 215, Ch. 6 The Solar System p. 216, Ch. 21 Stellar Explosions p. 232 ;</p> <p>Learner-Centered Astronomy Teaching Strategies booklet:</p> <p>Instructor Resource Center on CD-ROM: Disc 1, 2, 3, 4;</p> <p>Astronomy Today Media Manager DVD-ROM Chapter's 1-28, w/Technical Support 24/7;</p> <p>Pearson Education's Online Solutions Companion Web Site: http://www.phschool.com/access;</p>	
e.	Provide an example of how technology has helped	SE: 106, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117,	IRM: Relevant Lecture-Tutorials # 15 Telescopes and Earth's	

	scientists investigate the universe.	<p>118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 1128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141</p> <p>IRM: 65, 66, 67, 68, 69</p>	<p>Atmosphere p. 69; Student Companion Website Media Animations/Videos p. 74; Tutorials p. 75; Transparencies T-47-T-54 p. 75; Suggested Readings: pp. 75-76;</p> <p>Lecture-Tutorials for introductory astronomy booklet Telescopes and Earth's Atmosphere pp. 49-51;</p> <p>Peer Instruction For Astronomy booklet: Chapter 5 Telescopes, History pp. 53-55;</p> <p>Norton's Star Atlas and Reference Handbook: pp. 28-48;</p> <p>Learner-Centered Astronomy Teaching Strategies booklet:</p> <p>Instructor Resource Center on CD-ROM: Disc 1;</p> <p>Astronomy Today Media Manger DVD-ROM Chapter's 1-28, w/Technical Support 24/7;</p> <p>Pearson Education's Online Solutions Companion Web Site: http://www.phschool.com/access;</p>	
Objective 1.2: Relate the structure and composition of the solar				

system to the processes that exist in the universe.				
a.	Compare the elements formed in the big bang (hydrogen, helium) with elements formed through nuclear fusion in stars.	<p>SE: 438, 439, 440, 441, 442, 443, 444, 445, 446, 530, 531, 532, 533, 534, 535, 536, 552, 553, 558, 559, 560, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 742, 743, 744, 745, 756</p> <p>IRM: 204, 205, 255, 256, 269, 270, 271, 272, 350</p>	<p>IRM: Student Companion Website Media Animations/Videos Tritium Helium Fusion p. 211; Transparencies T-170-T-171 p. 266; T-141 p. 211; T-228 p. 356; Suggested Readings pp. 212-213, 266, 279;</p> <p>Lecture-Tutorials for introductory astronomy booklet Star Formation and Lifetimes pp. 111-112;</p> <p>Peer Instruction For Astronomy booklet: Chapter 5 pp. 93, 96, 102;</p> <p>Learner-Centered Astronomy Teaching Strategies booklet:</p> <p>Instructor Resource Center on CD-ROM: Disc 3, 4;</p> <p>Astronomy Today Media Manger DVD-ROM Chapter's 1-28, w/Technical Support 24/7;</p> <p>Pearson Education's Online Solutions Companion Web Site: http://www.phschool.com/access;</p>	
b.	Relate the life cycle of stars of various masses to the	SE: 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538,	IRM: Student Companion Website Media	

	relative mass of elements produced.	<p>539, 540, 541, 542, 543, 544, 545, 552, 553, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576</p> <p>IRM: 254, 255, 256, 257, 258, 271, 272</p>	<p>Animations/Videos p. 265; p. 277; Transparencies T-170-T-171 p. 266; Suggested Readings p. 266-267, 279;</p> <p>Lecture-Tutorials for introductory astronomy booklet Star Formation and Lifetimes pp. 111-112;</p> <p>Learner-Centered Astronomy Teaching Strategies booklet:</p> <p>Instructor Resource Center on CD-ROM: Disc 3;</p> <p>Astronomy Today Media Manger DVD-ROM Chapter's 1-28, w/Technical Support 24/7;</p> <p>Pearson Education's Online Solutions Companion Web Site: http://www.phschool.com/access;</p> <p>Starry Night Pro TM Activities & Observation and Research Projects: Ch. 21 Stellar Explosions p. 232;</p>	
c.	Explain the origin of the heavy elements on Earth (i.e., heavy elements were formed by fusion in ancient stars).	<p>SE: 97, 98, 170, 177, 178, 179, 180, 181, 196, 558, 559, 560, 566, 567, 568, 569, 570, 571, 572</p> <p>IRM: 91, 92, 269, 271, 272</p>	<p>IRM: Transparency T-68 p. 100; Suggested Readings p. 279;</p> <p>Learner-Centered Astronomy Teaching Strategies booklet:</p> <p>Instructor Resource Center on CD-ROM: Disc 1, 3;</p>	

			Astronomy Today Media Manger DVD-ROM Chapter's 1-28, w/Technical Support 24/7; Pearson Education's Online Solutions Companion Web Site: http://www.phschool.com/access ;	
d.	Present evidence that the process that formed Earth's heavy elements continues in stars today.	SE: 558, 559, 560, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576 IRM: 269, 271, 272	IRM: Transparency T-68 p. 100; Suggested Readings p. 279; Learner-Centered Astronomy Teaching Strategies booklet: Instructor Resource Center on CD-ROM: Disc 3; Astronomy Today Media Manger DVD-ROM Chapter's 1-28, w/Technical Support 24/7; Pearson Education's Online Solutions Companion Web Site: http://www.phschool.com/access ; Starry Night Pro™ Activities & Observation and Research Projects: Ch. 21 Stellar Explosions p. 232;	
e.	Compare the life cycle of the sun to the life cycle of other stars.	SE: 438, 439, 440, 441, 442, 443, 444, 445, 446, 528, 529, 530, 531, 532, 533, 534, 535, 536, 552, 553 IRM: 204, 205, 254, 255, 256	IRM: Relevant Lecture-Tutorials # 34 Stellar Evolution p. 259; Student Companion Website Media Animations/Videos pp. 211, 265; Tutorials p. 211; Transparencies T-140-T-141 p. 211;	

			<p>Suggested Readings: pp. 212-213, 267;</p> <p>Lecture-Tutorials for introductory astronomy booklet Stellar Evolution pp. 121-122;</p> <p>Learner-Centered Astronomy Teaching Strategies booklet:</p> <p>Instructor Resource Center on CD-ROM: Disc 3;</p> <p>Astronomy Today Media Manger DVD-ROM Chapter's 1-28, w/Technical Support 24/7;</p> <p>Pearson Education's Online Solutions Companion Web Site: http://www.phschool.com/access;</p> <p>Starry Night ProTM Activities & Observation and Research Projects: Ch. 16 The Sun p. 227;</p>	
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f.	<p>Relate the structure of the solar system to the forces acting upon it.</p>	<p>SE: 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 149, 150, 151, 152, 153, 154, 166, 167, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 409, 410, 594, 595, 596, 597, 598, 599, 606-607, 608-609, 611 IRM: 33, 34, 78, 79, 191, 192</p>	<p>IRM: Relevant Lecture-Tutorials # 7 Kepler's Second Law, #8 Kepler's Third Law, #9 Newton's Laws and Gravity, #26 Observing Retrograde Motion p. 35; Student Companion Website Media Animations/Videos pp. 47, 87, 198; Transparencies T-24-T27 p. 41; T-56 p. 87; T-121-T-125 p.198; Suggested Readings: pp. 43, 87-88;</p> <p>Lecture-Tutorials for introductory astronomy booklet Temperature and Formation of Our Solar System pp. 103-104;</p> <p>Peer Instruction For Astronomy booklet: Chapter 5 pp. 58, 62, 63, 64;</p> <p>Learner-Centered Astronomy Teaching Strategies booklet:</p> <p>Instructor Resource Center on CD-ROM: Disc 1, 3, 4;</p> <p>Astronomy Today Media Manger DVD-ROM Chapter's 1-28, w/Technical Support 24/7;</p> <p>Pearson Education's Online Solutions Companion Web Site: http://www.phschool.com/access;</p>	
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STANDARD II: Students will understand that the features of Earth’s evolving environment affect living systems, and that life on Earth is unique in the solar system.				
Percentage of coverage in the <i>student and teacher edition</i> for Standard II: <u>93</u> %		Percentage of coverage not in student or teacher edition, but covered in the <i>ancillary material</i> for Standard II: <u>78</u> %		
OBJECTIVES & INDICATORS		Coverage in <i>Student Edition</i>(SE) and <i>Teacher Edition</i> (TE) (pg #'s, etc.)	Coverage in <i>Ancillary Material</i> (titles, pg #'s, etc.)	<i>Not covered in TE, SE or ancillaries</i> ✓
Objective 2.1: Describe the unique physical features of Earth’s environment that make life on Earth possible.				
a.	Compare Earth’s atmosphere, solar energy, and water to those of other planets and moons in the solar system.	SE: 170, 171, 172, 173, 174, 175, 196, 200-225, 226, 227, 230-247, 248, 249, 252-274, 275, 276, 280-303, 304, 305, 308-332, 334, 335, 338-354, 355, 356, 357 IRM: 91, 103, 104, 105, 106, 116-119, 127-130, 140-144, 154-156, 166-168	IRM: Tutorials Atmospheric Lifetimes p. 100, Superspaceship-Voyage to Venus p. 124, Jupiter-Differential Rotation p. 150; Student Companion Website Media Animations/Videos pp. 112-113, 124, 135-136, 150, 173; Transparencies T-62 p. 100; T-76-T-85 p. 113; T-86-T-91 p. 124; T-92-T-95 p. 136;T-96-T-101 p, 150; T-102-T-108 p. 163; T-109-T-112 p. 174; Suggested Readings pp. 113-114, 125, 136-137, 151-152, 163-164, 174; Peer Instruction For Astronomy booklet: Chapter 5 pp. 78-90; Norton’s Star Atlas and Reference Handbook: pp.	

			<p>54-86;</p> <p>Starry Night Pro™ Activities & Observation and Research Projects: Activities 2-18; Observation and Research Projects Ch. The Moon and Mercury p. 218, Ch. 9 Venus p. 219, Ch.10 Mars p. 220, Ch. 11 Jupiter p. 221, Ch. 12 Saturn p. 222, Ch. 13 Uranus and Neptune p. 223;</p> <p>Learner-Centered Astronomy Teaching Strategies booklet:</p> <p>Instructor Resource Center on CD-ROM: Disc 1, 2;</p> <p>Astronomy Today Media Manger DVD-ROM Chapter's 1-28, w/Technical Support 24/7;</p> <p>Pearson Education's Online Solutions Companion Web Site: http://www.phschool.com/access;</p>	
b.	<p>Compare the conditions that currently support life on Earth to the conditions that exist on other planets in the solar system.</p>	<p>SE: 170 , 171, 172, 173, 174, 175, 196, 200-225, 226, 227, 230-247, 248, 249, 252-272, 275, 276, 280-292, 304, 305, 308-316, 334, 335, 338-346, IRM: 91, 116-119, 127-130, 140-142, 144, 154, 155, 166-167</p>	<p>IRM: Tutorials Atmospheric Lifetimes p. 100, Superspaceship-Voyage to Venus p. 124, Jupiter-Differential Rotation p. 150; Student Companion Website Media Animations/Videos pp. 112, 124, 135-136, 150, 163, 173;</p> <p>Transparencies T-62 p. 100; T-76, T-79-T-82 p. 113; T-86-T-91 p. 124; T-92-T-95 p. 136; T-96-</p>	

			<p>T-99 p. 150; T-102-T-104 p. 163; T-109-T-112 p. 174;</p> <p>Suggested Readings pp. 113-114, 125, 136-137, 151, 163-164, 174;</p> <p>Peer Instruction For Astronomy booklet: Chapter 5 pp. 83-90;</p> <p>Norton's Star Atlas and Reference Handbook: pp. 65-86;</p> <p>Starry Night Pro TM Activities & Observation and Research Projects: Activities 2 -7, 9, 13, 15, 17; Observation and Research Projects Ch. The Moon and Mercury p. 218, Ch. 9 Venus p. 219, Ch.10 Mars p. 220, Ch. 11 Jupiter p. 221, Ch. 12 Saturn p. 222, Ch. 13 Uranus and Neptune p. 223;</p> <p>Learner-Centered Astronomy Teaching Strategies booklet:</p> <p>Instructor Resource Center on CD-ROM: Disc 1, 2;</p> <p>Astronomy Today Media Manger DVD-ROM Chapter's 1-28, w/Technical Support 24/7;</p> <p>Pearson Education's Online Solutions Companion Web Site: http://www.phschool.com/access;</p>	
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c.	Evaluate evidence for existence of life in other star systems, planets, or moons, either now or in the past.	SE: 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777 IRM: 358, 359, 360, 361	IRM: Student Companion Website Media Animations/Videos p. 366; Transparencies T-235-T-239 p. 367; Suggested Readings pp. 367-368; Peer Instruction For Astronomy booklet: Chapter 5 p. 121; Learner-Centered Astronomy Teaching Strategies booklet: Starry Night Pro TM Activities & Observation and Research Projects: Ch. 28 Life in the Universe p. 239; Instructor Resource Center on CD-ROM: Disc 1, 3, 4; Astronomy Today Media Manger DVD-ROM Chapter's 1-28, w/Technical Support 24/7; Pearson Education's Online Solutions Companion Web Site: http://www.phschool.com/access ;	
Objective 2.2: Analyze how ecosystems differ from each other due to abiotic and biotic factors.				
a.	Observe and list abiotic factors (e.g., temperature, water, nutrients, sunlight, pH, topography) in specific ecosystems.	Biotic/abiotic factors in ecosystems can be developed from Ch. 28 Life in the Universe. SE: 760, 767, 776	IRM: Student Companion Website Media Animations/Videos p. 366; Transparency T-235 p. 367;	

		IRM: 358, 359	Suggested Readings p. 368;	
b.	Observe and list biotic factors (e.g., plants, animals, organic matter) that affect a specific ecosystem (e.g., wetlands, deserts, aquatic).	Biotic/abiotic factors in ecosystems can be developed from Ch. 28 Life in the Universe. SE: 760, 767, 776 IRM: 358, 359	IRM: Student Companion Website Media Animations/Videos p. 366; Transparency T-235 p. 367; Suggested Readings p. 368;	
c.	Predict how an ecosystem will change as a result of major changes in an abiotic and/or biotic factor.	Biotic/abiotic factors in ecosystems can be developed from Ch. 28 Life in the Universe. SE: 760, 767, 776 IRM: 358, 359	IRM: Student Companion Website Media Animations/Videos p. 366; Transparency T-235 p. 367; Suggested Readings p. 368;	
d.	Explain that energy enters the vast majority of Earth's ecosystems through photosynthesis, and compare the path of energy through two different ecosystems.	Energy in ecosystems can be developed from Ch. 28 Life in the Universe. SE: 767 IRM: 358, 359	IRM: Student Companion Website Media Animations/Videos p. 366; Transparency T-235 p. 367; Suggested Readings p. 368;	
e.	Analyze interactions within an ecosystem (e.g., water temperature and fish species, weathering and	Interactions within ecosystems can be developed from Ch. 28 Life in the Universe.	IRM: Student Companion Website Media Animations/Videos	

	water pH).	SE: 760, 767, 776 IRM: 358, 359	p. 366; Transparency T-235 p. 367; Suggested Readings p. 368;	
f.	Plan and conduct an experiment to investigate how abiotic factors influence organisms and how organisms influence the physical environment.	Investigating abiotic/biotic factors in the environment can be developed from Ch. 28 Life in the Universe. SE: 760, 767, 776 IRM: 358, 359	IRM: Student Companion Website Media Animations/Videos p. 366; Transparency T-235 p. 367; Suggested Readings p. 368;	
Objective 2.3: Examine Earth's diversity of life as it changes over time.				
a.	Observe and chart the diversity in a specific area.	SE: 764, 765, 776		
b.	Compare the diversity of life in various biomes specific to number of species, biomass, and type of organisms.			X
c.	Explain factors that contribute to the extinction of a species.	SE: 173, 175, 176, 366, 367, 386	IRM: Suggested Readings p. 187;	
d.	Compare evidence supporting various theories that explain the causes of large-scale extinctions in the past with factors causing the loss of species today.	SE: 366, 367, 386	IRM: Suggested Readings p. 187;	
e.	Evaluate the biological, esthetic, ethical, social, or economic arguments with regard to maintaining biodiversity.	SE: 176		
STANDARD III: Students will understand that gravity, density, and convection move Earth's plates and this movement causes the plates to				

impact other Earth systems.			
Percentage of coverage in the <i>student and teacher edition</i> for Standard III: <u>100</u> %		Percentage of coverage not in student or teacher edition, but covered in the <i>ancillary material</i> for Standard III: <u>100</u> %	
OBJECTIVES & INDICATORS		Coverage in <i>Student Edition (SE) and Teacher Edition (TE)</i> (pg #'s, etc.)	Coverage in <i>Ancillary Material</i> (titles, pg #'s, etc.) <i>Not covered in TE, SE or ancillaries</i> ✓
Objective 3.1: Explain the evidence that supports the theory of plate tectonics.			
a.	Define and describe the location of the major plates and plate boundaries.	SE: 181, 182, 183, 184, 185, 186, 187, 196	IRM: Relevant Lecture-Tutorials # 27 Earth's Changing Surface p. 95; Transparencies T-69, T-71 p. 100; Suggested Readings p. 101; Peer Instruction For Astronomy booklet: Chapter 5 p. 77; Lecture-Tutorials for introductory astronomy booklet Earth's Changing Surface pp. 99-100; Learner-Centered Astronomy Teaching Strategies booklet: Instructor Resource Center on CD-ROM: Disc 1; Astronomy Today Media Manger DVD-ROM Chapter's 1-28, w/Technical Support 24/7;

			Pearson Education's Online Solutions Companion Web Site: http://www.phschool.com/access;	
b.	Compare the movement and results of movement along convergent, divergent, and transform plate boundaries.	SE: 181, 182, 187, 188, 189, 196, 197 IRM: 91, 92	IRM: Relevant Lecture-Tutorials # 27 Earth's Changing Surface p. 95; Transparencies T-69-T-72 p. 100; Suggested Readings p. 101; Peer Instruction For Astronomy booklet: Chapter 5 p. 77; Lecture-Tutorials for introductory astronomy booklet Earth's Changing Surface pp. 99-100; Learner-Centered Astronomy Teaching Strategies booklet: Instructor Resource Center on CD-ROM: Disc 1; Astronomy Today Media Manger DVD-ROM Chapter's 1-28, w/Technical Support 24/7; Pearson Education's Online Solutions Companion Web Site: http://www.phschool.com/access;	
c.	Relate the location of earthquakes and volcanoes to plate boundaries.	SE: 178, 179, 181, 182, 196 IRM: 92	IRM: Relevant Lecture-Tutorials # 27 Earth's Changing Surface p. 95; Transparencies T-65-T-66 p. 100;	

			<p>Suggested Readings p. 101;</p> <p>Learner-Centered Astronomy Teaching Strategies booklet:</p> <p>Lecture-Tutorials for introductory astronomy booklet Earth's Changing Surface pp. 99-100;</p> <p>Instructor Resource Center on CD-ROM: Disc 1;</p> <p>Astronomy Today Media Manger DVD-ROM Chapter's 1-28, w/Technical Support 24/7;</p> <p>Pearson Education's Online Solutions Companion Web Site: http://www.phschool.com/access;</p>	
d.	<p>Explain Alfred Wegener's continental drift hypothesis, his evidence, and why it was not accepted in his time.</p>	<p>SE: 181, 182, 183, 184, 196</p> <p>IRM: 92</p>	<p>IRM: Relevant Lecture-Tutorials # 27 Earth's Changing Surface p. 95;</p> <p>Transparency T-72 p. 100;</p> <p>Lecture-Tutorials for introductory astronomy booklet Earth's Changing Surface pp. 99-100;</p> <p>Learner-Centered Astronomy Teaching Strategies booklet:</p> <p>Instructor Resource Center on CD-ROM: Disc 1;</p> <p>Astronomy Today Media Manger DVD-ROM Chapter's</p>	

			1-28, w/Technical Support 24/7; Pearson Education's Online Solutions Companion Web Site: http://www.phschool.com/access;	
e.	Evaluate the evidence for the current theory of plate tectonics.	SE: 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 196, 197 IRM: 91, 92	IRM: Relevant Lecture-Tutorials # 27 Earth's Changing Surface p. 95; Transparencies T-69-T-72 p. 100; Suggested Readings p. 101; Lecture-Tutorials for introductory astronomy booklet Earth's Changing Surface pp. 99-100; Learner-Centered Astronomy Teaching Strategies booklet: Instructor Resource Center on CD-ROM: Disc 1; Astronomy Today Media Manger DVD-ROM Chapter's 1-28, w/Technical Support 24/7; Pearson Education's Online Solutions Companion Web Site: http://www.phschool.com/access;	
Objective 3.2: Describe the processes within Earth that result in				

plate motion and relate it to changes in other Earth systems.				
a.	Identify the energy sources that cause material to move within Earth.	SE: 187, 188, 189, 196 IRM: 91, 92	IRM: Transparencies T-69-T-72 p. 100; Suggested Readings p. 101; Learner-Centered Astronomy Teaching Strategies booklet: Instructor Resource Center on CD-ROM: Disc 1; Astronomy Today Media Manger DVD-ROM Chapter's 1-28, w/Technical Support 24/7; Pearson Education's Online Solutions Companion Web Site: http://www.phschool.com/access ;	
b.	Model the movement of materials within Earth.	SE: 181, 182, 183, 184, 185, 197 IRM: 91, 92	IRM: Transparencies T-69-T-72 p. 100; Suggested Readings p. 101; Lecture-Tutorials for introductory astronomy booklet Earth's Changing Surface pp. 99-100; Learner-Centered Astronomy Teaching Strategies booklet: Instructor Resource Center on CD-ROM: Disc 1;	

			Astronomy Today Media Manger DVD-ROM Chapter's 1-28, w/Technical Support 24/7; Pearson Education's Online Solutions Companion Web Site: http://www.phschool.com/access;	
c.	Model the movement and interaction of plates.	SE: 181, 182, 183, 184, 185, 186, 187, 188, 189, 196 IRM: 92	IRM: Transparencies T-69-T-72 p. 100; Suggested Readings p. 101; Lecture-Tutorials for introductory astronomy booklet Earth's Changing Surface pp. 99-100; Learner-Centered Astronomy Teaching Strategies booklet: Instructor Resource Center on CD-ROM: Disc 1; Astronomy Today Media Manger DVD-ROM Chapter's 1-28, w/Technical Support 24/7; Pearson Education's Online Solutions Companion Web Site: http://www.phschool.com/access;	
d.	Relate the movement and interaction of plates to volcanic eruptions, mountain building, and climate changes.	SE: 175, 176, 181, 182, 183, 184, 185, 186, 187, 188, 189, 196 IRM: 92	IRM: Transparencies T-69-T-72 p. 100; Suggested Readings p. 101; Lecture-Tutorials for introductory astronomy booklet Earth's Changing Surface pp.	

			99-100; Learner-Centered Astronomy Teaching Strategies booklet: Instructor Resource Center on CD-ROM: Disc 1; Astronomy Today Media Manger DVD-ROM Chapter's 1-28, w/Technical Support 24/7; Pearson Education's Online Solutions Companion Web Site: http://www.phschool.com/access ;	
e.	Predict the effects of plate movement on other Earth systems (e.g., volcanic eruptions affect weather, mountain building diverts waterways, uplift changes elevation that alters plant and animal diversity, upwelling from ocean vents results in changes in biomass).	SE: 175, 176, 181, 182, 183, 184, 185, 186, 187, 188, 189, 196 IRM: 92	IRM: Transparencies T-69-T-72 p. 100; Suggested Readings p. 101; Lecture-Tutorials for introductory astronomy booklet Earth's Changing Surface pp. 99-100; Learner-Centered Astronomy Teaching Strategies booklet: Instructor Resource Center on CD-ROM: Disc 1; Astronomy Today Media Manger DVD-ROM Chapter's 1-28, w/Technical Support 24/7; Pearson Education's Online Solutions Companion Web Site: http://www.phschool.com/access	

STANDARD IV: Students will understand that water cycles through and between reservoirs in the hydrosphere and affects the other spheres of the Earth system.

Percentage of coverage in the <i>student and teacher edition</i> for Standard IV: <u>100</u> %		Percentage of coverage not in student or teacher edition, but covered in the <i>ancillary material</i> for Standard IV: <u>20</u> %		
OBJECTIVES & INDICATORS		Coverage in <i>Student Edition (SE) and Teacher Edition (TE)</i> (pg #’s, etc.)	Coverage in <i>Ancillary Material</i> (titles, pg #’s, etc.)	<i>Not covered in TE, SE or ancillaries</i> ✓
Objective 4.1: Explain the water cycle in terms of its reservoirs, the movement between reservoirs, and the energy to move water. Evaluate the importance of freshwater to the biosphere.				
a.	Identify the reservoirs of Earth’s water cycle (e.g., ocean, ice caps/glaciers, atmosphere, lakes, rivers, biosphere, groundwater) locally and globally, and graph or chart relative amounts in global reservoirs.	Identifying Earth’s water reservoirs can be developed from the following: Chapter 7-Earth Our Home in Space as seen from the photographs on pp. 169, 172 taken by the GOES-7 environmental satellite provide visual images of Earth as a water planet. SE: 168-169 IRM:		
b.	Illustrate the movement of water on Earth and describe how the processes that move water (e.g., evaporation of water, melting of ice/snow, ocean currents, movement of water vapor by wind) use energy from the sun.	Movement of water on Earth can be developed from the following: Chapter 7-Earth Our Home in Space as seen from the photographs on pp. 169, 172 taken by the GOES-7 environmental satellite provide visual images of Earth as a		

		water planet. SE: 168-169, 176		
c.	Relate the physical and chemical properties of water to a water pollution issue.	Water conservation and wise use of water resources can be developed from the following: Chapter 7-Earth Our Home in Space as seen from the photographs on pp. 169, 172 taken by the GOES-7 environmental satellite provide visual images of Earth as a water planet. SE: 168-169		
d.	Make inferences about the quality and/or quantity of freshwater, using data collected from local water systems.	Local water systems quality/quantity can be developed from the following: Chapter 7-Earth Our Home in Space as seen from the photographs on pp. 169, 172 taken by the GOES-7 environmental satellite provide visual images of Earth as a water planet. SE: 168-169		
e.	Analyze how communities deal with water shortages, distribution, and quality in designing a long-term water use plan.	Water conservation and wise use of community water resources can be developed from the following: Chapter 7-Earth Our Home in Space as seen from the photographs on pp. 169, 172 taken by the GOES-7 environmental satellite provide visual images of Earth as a water planet.		

		SE: 168-169		
Objective 4.2: Analyze the physical and biological dynamics of the oceans.				
a.	Describe the physical dynamics of the oceans (e.g., wave action, ocean currents, El Nino, tides).	The following references can be developed into specific content relating to the physical and biological characteristics of Earth's Oceans. SE: 170, 192, 193, 196 IRM: 93, 94	IRM: Transparencies T-74-T-75 p. 101 ; Instructor Resource Center on CD-ROM: Disc 1; Starry Night Pro™ Activities & Observation and Research Projects: Ch. Earth p. 217;	
b.	Determine how physical properties of oceans affect organisms (e.g., salinity, depth, tides, temperature).	The following references can be developed into specific content relating to the physical and biological characteristics of Earth's Oceans. SE: 175, 192, 193, 196 IRM: 93, 94	IRM: Transparencies T-74-T-75 p. 101 ; Instructor Resource Center on CD-ROM: Disc 1; Starry Night Pro™ Activities & Observation and Research Projects: Ch. Earth p. 217;	
c.	Model energy flow in ocean ecosystems.	The following references can be developed into specific content relating to the physical and biological characteristics of Earth's Oceans. SE: 767		
d.	Research and report on changing ocean levels	The following references can		

	over geologic time, and relate changes in ocean level to changes in the water cycle.	be developed into specific content relating to the physical and biological characteristics of Earth's Oceans. SE: 170, 765		
e.	Describe how changing sea levels could affect life on Earth.	The following references can be developed into specific content relating to the physical and biological characteristics of Earth's Oceans. SE: 175, 765		
STANDARD V: Students will understand that Earth's atmosphere interacts with and is altered by the lithosphere, hydrosphere, and biosphere.				
Percentage of coverage in the <i>student and teacher edition</i> for Standard V: <u>89</u> %		Percentage of coverage not in student or teacher edition, but covered in the <i>ancillary material</i> for Standard V: <u>89</u> %		
		Coverage in <i>Student</i>	Coverage in <i>Ancillary Material</i>	<i>Not covered in TE, SE or</i>

OBJECTIVES & INDICATORS		<i>Edition(SE) and Teacher Edition (TE) (pg #’s, etc.)</i>	(titles, pg #’s, etc.)	<i>ancillaries ✓</i>
Objective 5.1: Describe how matter in the atmosphere cycles through other Earth systems.				
a.	Trace movement of a carbon atom from the atmosphere through a plant, animal, and decomposer, and back into the atmosphere.	The following references can be developed into specific content, tracing the path of carbon in the biosphere. SE: 170, 175	Instructor Resource Center on CD-ROM: Disc 1;	
b.	Diagram the nitrogen cycle and provide examples of human actions that affect this cycle (e.g., fertilizers, crop rotation, fossil fuel combustion).			X
c.	Interpret evidence suggesting that humans are influencing the carbon cycle.	SE: 173, 175, 176 IRM: 91	IRM: Transparency T-64 p. 100; Instructor Resource Center on CD-ROM: Disc 1; Starry Night Pro TM Activities & Observation and Research Projects: Ch. Earth p. 217; Learner-Centered Astronomy Teaching Strategies booklet: Instructor Resource Center on CD-ROM: Disc 1; Astronomy Today Media Manger DVD-ROM Chapter’s 1-28, w/Technical Support 24/7; Pearson Education’s Online Solutions Companion Web Site:	

			http://www.phschool.com/access;	
d.	Research ways the biosphere, hydrosphere, and lithosphere interact with the atmosphere (e.g., volcanic eruptions putting ash and gases into the atmosphere, hurricanes, changes in vegetation).	The following references can be developed to show interaction between Earth's spheres. SE: 170, 171, 172, 173, 174, 175, 176, 196	IRM: Transparencies T-61-T-62 p. 100; Instructor Resource Center on CD-ROM: Disc 1;	
Objective 5.2: Trace ways in which the atmosphere has been altered by living systems and has itself strongly affected living systems over the course of Earth's history.				
a.	Define ozone and compare its effects in the lower and upper atmosphere.	SE: 73, 172, 173 IRM: 91	Learner-Centered Astronomy Teaching Strategies booklet: Instructor Resource Center on CD-ROM: Disc 1; Astronomy Today Media Manger DVD-ROM Chapter's 1-28, w/Technical Support 24/7; Pearson Education's Online Solutions Companion Web Site: http://www.phschool.com/access;	
b.	Describe the role of living organisms in producing the ozone layer and how the ozone layer affected the development of life on Earth.	SE: 175, 196 IRM: 91	Learner-Centered Astronomy Teaching Strategies booklet: Instructor Resource Center on CD-ROM: Disc 1; Astronomy Today Media Manger DVD-ROM Chapter's 1-28, w/Technical Support 24/7;	

			Pearson Education's Online Solutions Companion Web Site: http://www.phschool.com/access ;	
c.	Compare the rate at which CO ₂ is put into the atmosphere to the rate at which it is removed through the carbon cycle.	SE: 170, 175 IRM: 91	Learner-Centered Astronomy Teaching Strategies booklet: Instructor Resource Center on CD-ROM: Disc 1; Starry Night Pro™ Activities & Observation and Research Projects: Ch. Earth p. 217; Astronomy Today Media Manger DVD-ROM Chapter's 1-28, w/Technical Support 24/7; Pearson Education's Online Solutions Companion Web Site: http://www.phschool.com/access ;	
d.	Analyze data relating to the concentration of atmospheric CO ₂ over the past 100 years.	SE: 175, 176 IRM: 91	Learner-Centered Astronomy Teaching Strategies booklet: Instructor Resource Center on CD-ROM: Disc 1; Astronomy Today Media Manger DVD-ROM Chapter's 1-28, w/Technical Support 24/7; Pearson Education's Online Solutions Companion Web Site: http://www.phschool.com/access ;	

e.	Research, evaluate, and report on international efforts to protect the atmosphere.	SE: 176 IRM: 91	<p>Learner-Centered Astronomy Teaching Strategies booklet:</p> <p>Instructor Resource Center on CD-ROM: Disc 1;</p> <p>Starry Night Pro™ Activities & Observation and Research Projects: Ch. Earth p. 217;</p> <p>Astronomy Today Media Manger DVD-ROM Chapter's 1-28, w/Technical Support 24/7;</p> <p>Pearson Education's Online Solutions Companion Web Site: http://www.phschool.com/access;</p>	
STANDARD VI: Students will understand the source and distribution of energy on Earth and its effects on Earth systems.				
Percentage of coverage in the <i>student and teacher edition</i> for Standard VI: <u>100</u> %		Percentage of coverage not in student or teacher edition, but covered in the <i>ancillary material</i> for Standard VI: <u>64</u> %		
OBJECTIVES & INDICATORS		Coverage in <i>Student Edition (SE)</i> and <i>Teacher Edition (TE)</i> (pg #’s, etc.)	Coverage in <i>Ancillary Material</i> (titles, pg #’s, etc.)	<i>Not covered in TE, SE or ancillaries</i> ✓
Objective 6.1: Describe the transformation of solar				

	energy into heat and chemical energy on Earth and eventually the radiation of energy to space.			
a.	Illustrate the distribution of energy coming from the sun that is reflected, changed into heat, or stored by plants.	SE: 171, 172, 173, 174, 175, 196, 416, 434	IRM: Transparency T-63 p. 100; Learner-Centered Astronomy Teaching Strategies booklet: Instructor Resource Center on CD-ROM: Disc 1; Astronomy Today Media Manger DVD-ROM Chapter's 1-28, w/Technical Support 24/7; Pearson Education's Online Solutions Companion Web Site: http://www.phschool.com/access ;	
b.	Describe the pathways for converting and storing light energy as chemical energy (e.g., light energy converted to chemical energy stored in plants, plants become fossil fuel).	The following references can be developed into specific content relating to photosynthesis. SE: 176, 416 IRM: 91		
c.	Investigate the conversion of light energy from the sun into heat energy by various Earth materials.	SE: 171, 172, 173, 174, 175	Learner-Centered Astronomy Teaching Strategies booklet: Instructor Resource Center on CD-ROM: Disc 1;	

			Astronomy Today Media Manger DVD-ROM Chapter's 1-28, w/Technical Support 24/7; Pearson Education's Online Solutions Companion Web Site: http://www.phschool.com/access;	
d.	Demonstrate how absorbed solar energy eventually leaves the Earth system as heat radiating to space.	SE: 173, 418	Learner-Centered Astronomy Teaching Strategies booklet: Instructor Resource Center on CD-ROM: Disc 1; Astronomy Today Media Manger DVD-ROM Chapter's 1-28, w/Technical Support 24/7; Pearson Education's Online Solutions Companion Web Site: http://www.phschool.com/access;	
e.	Construct a model that demonstrates the reduction of heat loss due to a greenhouse effect.	SE: 175, 176, 196 IRM: 91	IRM: Transparency T-64 p. 100; Learner-Centered Astronomy Teaching Strategies booklet: Instructor Resource Center on CD-ROM: Disc 1; Astronomy Today Media Manger DVD-ROM Chapter's 1-28, w/Technical Support 24/7; Pearson Education's Online Solutions Companion Web Site: http://www.phschool.com/access;	

			Starry Night Pro™ Activities & Observation and Research Projects: Ch. 7 Earth p. 217;	
f.	Research global changes and relate them to Earth systems (e.g., global warming, solar fluctuations).	SE: 175, 176, 196, 434 IRM: 91	IRM: Transparency T-64 p. 100; Learner-Centered Astronomy Teaching Strategies booklet: Instructor Resource Center on CD-ROM: Disc 1; Astronomy Today Media Manger DVD-ROM Chapter's 1-28, w/Technical Support 24/7; Pearson Education's Online Solutions Companion Web Site: http://www.phschool.com/access; Starry Night Pro™ Activities & Observation and Research Projects: Ch. 7 Earth p. 217;	
Objective 6.2: Relate energy sources and transformation to the effects on Earth systems.				
a.	Describe the difference between climate and weather, and how technology is used to monitor changes in each.	The following references can be used to introduce/develop Earth's weather/climate and how it is monitored. SE: 176, 434		
b.	Describe the effect of solar energy on the determination	The following references can be used to introduce/develop	IRM: Transparency T-62 p. 100;	

	of climate and weather (e.g., El Nino, solar intensity).	the effect of solar energy on climate and weather. SE: 171, 172, 173, 175, 196, 434 IRM: 90, 91		
c.	Explain how uneven heating at the equator and polar regions creates atmospheric and oceanic convection currents that move heat energy around Earth.	SE: 171, 172, 173, 175, 196 IRM: 90, 91	IRM: Transparency T-62 p. 100;	
d.	Describe the Coriolis effect and its role in global wind and ocean current patterns.	SE: 171, 172 IRM:		
e.	Relate how weather patterns are the result of interactions among ocean currents, air currents, and topography.	The following references can be used to introduce/develop Earth's weather pattern. SE: 171, 172, 176, 434		